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30th SPACE WING/VANDENBERG AIR FORCE BASE

LAUNCH SITE SAFETY ASSESSMENT

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LIST OF ABBREVIATIONS, ACRONYMS & DEFINITIONS

30 SW – 30th Space Wing
30 CES/CEV – 30th Space Wing Environmental Office
30 LG- 30th Logistics Group
30 MDG- 30th Medical Group
30 OG- 30th Operations Group
30 RANS/DO- 30 Range Squadron Director of Operations
30 RANS/DOUS- 30 Range Tasking/Scheduling
30 SW/SE - 30th Space Wing, Office of the Chief of Safety; see also Office of the Chief of Safety
30 SW/SEG - 30th Space Wing, Ground Safety
30 SW/SEGP - 30th Space Wing, Pad Safety
30 SW/SEO - 30th Space Wing, Mission Flight Control
30 SW/SEOS - 30th Space Wing, Space Transportation System Operations Support and Analysis
30 SW/SES – 30th Space Wing, Systems Safety
30 SW/SESE – 30th Space Wing, Systems Safety Engineering Support
30 SW/SESI – 30th Space Wing, Systems Safety Integration
30 SW/SEY – 30th Space Wing, Flight Analysis
30 SPTG - 30th Support Group
30 SW/XPR – 30th Space Wing, Plans & Requirements
ACC – Area Control Center
ACO – Air/Aeronautical Control Officer
ADESS – Analog Data Equipment Switching System
ADS – Acquisition Data System
ADSC – Acquisition Data Systems Controller
Aero - Aerospace
AF - Air Force
AFOSH – Air Force Occupational Safety and Health
AFI - Air Force Instruction
AFS – Air Force Station
AFSPC – Air Force Space Command
AFSPC/CE – Air Force Space Command Acquisition Civil Engineering
AFSPC/CEVR – Air Force Space Command Environmental Planning Division
AFSPC/DO – Air Force Space Command Director of Operations
AFSPC/DOSL – Air Force Space Command Commercial Space Lift Operations
AGC - Automatic Gain Control
ALD – Assistant Launch Director
ALTREV – Altitude reservation
ANT - Antigua Air Station

approval - Range Safety approval is the final approval necessary for data packages such as the Preliminary Flight Data Package, the Final Flight Data Package, the Missile System Prelaunch Safety Package, the Range Safety System Report, the Ground Operations Plan, and the Facility Safety Data Package. In addition, Range Safety approval is required for hazardous and safety critical procedures prior to the procedure being performed; however, Range Safety approval does not constitute final approval for hazardous and safety critical procedures since Range Users normally have additional approval requirements prior to the procedure being performed.

ARDES – Automatic Recorded Data Evaluation System

ARIA - Advanced Range Instrumentation Aircraft

ARG - Argentina

ARSR – Air Route Surveillance Radar

ARTCC – Air Route Traffic Control Center

ASC - Ascension Auxiliary Air Field

ASO – Astrotech Space Operations

ASOS – Automated Surface Observing System

AST - Associate Administrator for Commercial Space Transportation

ATOTS - Advanced Transportable Optical Tracking Systems

ATSS – Automated Train Surveillance System

CARF – Central Altitude Reservation Function

CATEX - Categorical Exclusion

CCAS - Cape Canaveral Air Station

CCC - Central Computer Complex

CCD - Charged Coupled Device

CCFF – Cape Canaveral Forecast Facility

CCPS – Central Control Processing System

CCRS - Central Command Remoting System

CCS – Command and Control System

CCT – Command Control Transmitter

CCTMS – Command Control Transmitter Mobile System

C/D – Countdown

CDR – Concept/Critical Design Review

CDS - Command Destruct System

CFR – Code of Federal Regulations

CIF - Central Integration Facility

CMC – Command Management Center

CMEV - Command Message Encoder Verifier

COLA – Collision Avoidance

Comm - Communications

commercial user - a non-federal government organization that provides launch operations services

Contr - Contracts

control authority - a single commercial user on-site director and/or manager, a full time government tenant director and/or commander, or United States Air Force squadron/detachment commander responsible for the implementation of launch complex safety requirements

CRA – clear text recording area

CRT – Cathode Ray Tube

CSC – Command System Controller

CSO – Complex Safety Officer

CTC – Command Transmitter Controller

DAC – Duty Air Controller

⁰ - degree, degrees

DASS – Doppler Acoustic Sounder System

dB – decibel. A unit used to express relative difference in power or intensity, usually between two acoustic or electric signals, equal to ten times the common logarithm of the ratio of the two levels. [deci- + bel.]

DEP – Directed Energy Plans

deviation - a designation used when a design noncompliance is known to exist prior to hardware production or an operational noncompliance is known to exist prior to beginning operations at CCAS and Vandenberg Air Force Base

DMI – Deployment Mapping Instrument

DMSP – Defense Meteorological Satellite Program

DNM – Data Network Manager

DOAMS - Distant Object Attitude Measurement System

DoD - Department of Defense

DoDD - Department of Defense Directive

DoT/FAA/AST – Department of Transportation /Federal Aviation Administration
/Associate Administrator for Space Transportation

DPM – Data Processing Manager

E_c – casualty expectation

EA – Environmental Assessment

EELV - Evolved Expendable Launch Vehicle

EIAP - Environmental Impact Analysis Process

EIS - Environmental Impact Statement

ELV - Expendable Launch Vehicle

Eng - Engineering

EPC - Environmental Protection Committee

ER - Eastern Range

errant launch vehicle -a launch vehicle that, during flight, violates established flight safety criteria and/or operates erratically in a manner inconsistent with its intended flight performance. Continued flight of an errant launch vehicle may grossly deviate from planned flight, with the possibility of increasing public risk to unacceptable limits.

EWR – Eastern and Western Regulation

explosive quantity distance site plans - a formal plan for explosives facilities and areas required in accordance with AFM 91-201 and DoD 6055.9-STD detailing explosives quantity operating and storage limits and restrictions and resultant distance clearance requirements

explosives - all ammunition, demolition material, solid rocket motors, liquid propellants, pyrotechnics, and ordnance as defined in AFM 91-201 and DoD 6055.9-STD.

FAA/AST – Federal Aviation Administration/Associate Administrator for Space Transportation

failure - the inability of a system or system component to perform a required function within specified limits

FCA – Flight Caution Area or a mobile van specifically designed for and assigned the function of frequency control and analysis.

Flight Caution Area - a Hazardous Launch Area; the controlled surface area and airspace outside the Flight Hazard Area (FHA) where individual risk from a launch vehicle malfunction during the early phase of flight exceeds 1×10^{-6} . When activated, only personnel essential to the launch operation (mission-essential) with adequate breathing protection are permitted in this area; see also Flight Hazard Area, mission-essential personnel

FDP – Flight Data Package

FFPA – Final Flight Plan Approval

FHA – Flight Hazard Area

Flight Hazard Area - a Hazardous Launch Area; the controlled surface area and airspace about the launch pad and flight azimuth where individual risk from a malfunction during the early phase of flight exceeds 1×10^{-5} . Because the risk of serious injury or death from blast overpressure or debris is so significant, only mission-essential personnel in approved blast-hardened structures with adequate breathing protection are permitted in this area during launch.

flight termination action - the transmission of thrust termination and/or destruct commands to a launched launch vehicle and/or payload

Flt - Flight

FONSI - Finding of No Significant Impact

FOSM – Flight Operations Safety Manager

FPA – Flight Plan Approval

FSA – Flight Safety Analyst

FSDP – Facilities Safety Data Package

FSPO – Flight Safety Project Officer

FTS - Flight Termination Systems

FTS - Flight Termination System; includes the Radio Controlled Command Destruct System, the Automatic Destruct System, and associated subsystems

FTU - Flight Termination Unit

GHz - Gigahertz

GOES – Geostationary Orbiting Environmental Satellite

GOP – Ground Operations Plan

GSE – Ground Support Equipment

GSO – Guidance Systems Observer

GTO - Geotransfer Orbit

HAIR – High Accuracy Instrumentation Radar

hangfire - a condition that exists when the ignition signal is known to have been sent and reached an initiator but ignition of the propulsion system is not achieved

hazard, hazardous - equipment, systems, events, and situations with an existing or potential condition that may result in a mishap

HF - High Frequency

hold - a temporary delay in the countdown, test, or practice sequence for any reason

holdfire - an interruption of the ignition circuit of a launch vehicle, see “safety holds”

HQ - Headquarters

HPWT – High Performance Work Team

HYDROPAC – A special notice to mariners that defines the broad ocean hazard areas in the Pacific Ocean. It applies to boats and ships.

IFLOT - Intermediate Focal Length Optical Tracker

IGOR - Intercept Ground Optical Recorders

IIP – Instantaneous Impact Point

ILL - Impact Limit Line

imminent danger - any condition, operation, or situation that occurs on the Range where a danger exists that could reasonably be expected to cause death or serious physical harm, immediately or before the imminence of such danger can be eliminated through control procedures; these situations also include health hazards where it is reasonably expected that exposure to a toxic substance or other hazard will occur that will cause harm to such a degree as to shorten life or cause a substantial reduction in physical or mental efficiency even though the resulting harm may not manifest itself immediately

impact area - an area surrounding an approved impact point based on the launch vehicle and/or payload dispersion characteristics

impact limit line - a Hazardous Launch Area; the boundary within which trajectory constraints and FTSs are used to contain an errant launch vehicle and vehicle debris. Mission-essential and Wing-essential personnel are permitted within the ILLs; with Wing Commander approval, non-essential personnel may be permitted within this area. However, the collective risk will not exceed acceptable standards for non-essential personnel; see also mission-essential personnel, non-essential personnel

independent - not capable of being influenced by other systems

individual risk - the risk to a randomly exposed individual; the probability that the individual will be a casualty

INSRP – Interagency Nuclear Safety Review Panel

IPF – Integrated Processing Facility

IRIG – Inter-Range Instrumentation Group

ISA – Initial Support Agreement

ISP – Intended Support Plan(s)

ITL - Integrate-Transfer-Launch

ITT - Industries, Systems Division Holds the Range Operations, Maintain, and Support Services Contract.

JDMTA - Jonathan Dickinson Missile Tracking Annex

JLRPG - Joint Long Range Proving Grounds

KMR – Kwajalein Missile Range

KSC - Kennedy Space Center

KTM - Kineto Tracking Mounts

KW – Kilowatt. A unit of power equal to 1,000 watts.

LA-24 – Large Aperture (24 inch) telescope located on Tranquillon Peak VAFB

LARA – Launch Area Risk Analysisist

LASP – Launch Abort Subpanel

launch area - the facility, in this case, VAFB, where launch vehicles and payloads are launched; includes any supporting sites on the Western Range; also known as launch head

launch area safety - safety requirements involving risks limited to personnel and/or property on VAFB and involves multiple commercial users, government tenants, or United State Air Force squadron commanders

launch complex - a defined area that supports launch vehicle or payload operations or storage; includes launch pads and/or associated facilities

launch complex safety - safety requirements involving risk that is limited to personnel and/or property located within the well defined confines of a launch complex, facility, or group of facilities; for example, within the fence line; involves risk only to those personnel and/or property under the control of the control authority for the launch complex, facility, or group of facilities

launch head - see launch area

launch vehicle - a vehicle that carries and/or delivers a payload to a desired location; this is a generic term that applies to all vehicles that may be launched from the Western Range, including but not limited to airplanes; all types of space launch vehicles, manned space vehicles, missiles, and rockets and their stages; probes; aerostats and balloons; drones; remotely piloted vehicles; projectiles, torpedoes and air-dropped bodies

LBS - Launch base Support

LCC – Launch Commit Criteria

LD – Launch Director

LDZ – Launch Danger Zone

lead time - the time between the beginning of a process or project and the appearance of its results

LF – Launch Facility

LLPS – Lightning Location and Protection System

LOCC – Launch Operations Control Center

Log - Logistics

LONOTE – Local Notice to Mariners

LRR – Launch Readiness Review

LWO – Launch Weather Officer

MARSSS - Meteorological and Range Safety Support System

MAX-Q – Maximum Dynamic Pressure

MC – ROMSSC Mission Controller

MCS – Mission Control Supervisor

MDPS – Metric Data Processing System

Med – Medical or Medicine

MERCAST – merchant ship broadcasts

MFCC – Missile Flight Control Center

MFTGS – Missile Flight Termination Ground System

MIC - meets intent certification; a noncompliance designation used to indicate that an equivalent level of safety is maintained despite not meeting the exact requirements stated in this Regulation

MIGOR - Mobile Intercept Ground Optical Recorders

MIPIR – Missile Precision Instrumentation Radar

misfire - a condition that exists when it is known that the ignition signal has been sent but did not reach an initiator and ignition of the propulsion system was not achieved

mission-essential personnel - those persons necessary to successfully and safely complete a hazardous or launch operation and whose absence would jeopardize the completion of the operation; includes persons required to perform emergency actions according to authorized directives, persons specifically authorized by the Wing Commander to perform scheduled activities, and person in training; the number of mission-essential personnel allowed within Safety Clearance Zones or Hazardous Launch Areas is determined by the Wing Commander and the Range User with Range Safety concurrence

Mission Rules - a document of agreements between the Range User and Range Director specifying, in detail, those requirements and procedures not covered by this document

MFC – Mission Flight Control

MFCO - Missile Flight Control Officer

MFCO - Mission Flight Control Officer - a United States Air Force Officer or civilian who monitors the performance of launch vehicles in flight and initiates flight termination action when required; the direct representative of the Range Commander during the prelaunch countdown and during launch vehicle powered flight

MOTR – Multiple Object Tracking Radar

MOTS - Mobile Optical Tracking System

Msn - Mission

MSPSP – Missile System Prelaunch Safety Package

MSS – Meteorological Sounding System

MST – Mobile Service Tower

MSU - Message Storage Unit

MTDES – Magnetic Tape Dub and Evaluation System

MTE – Minimum Time to Endanger

MTI – Moving Target Indication

NASA - National Aeronautics and Space Administration

NASA KSC VLS - National Aeronautics and Space Administration, Kennedy Space Center, Vandenberg Launch Site

NASCOM - NASA Communications Network

NAWC – Naval Air Warfare Center

NEPA - National Environmental Policy Act

NEXRAD – WSR-88D Doppler Radar

NIMA – National Imagery and Mapping Agency (part of Coast Guard Marine Navigation Department)

nominal vehicle - a properly performing launch vehicle whose instantaneous impact point (IIP) does not deviate from the intended IIP locus

noncompliance - a noticeable or marked departure from Regulation standards or procedures; includes deviations, meets intent certifications, and waivers

non-essential personnel - those persons not deemed mission-essential or Wing-essential; includes the general public, visitors, the media, and any persons who can be excluded from Safety Clearance Zones with no effect on the operation or parallel operations

NOAA – National Oceanic and Atmospheric Association

NORAD – North America Defense Command

NOSC – Naval Ocean Systems Center

NOTAM – Notices to Airmen

NOTMAR – Notices to Mariners

NVAFB – North Vandenberg Air Force Base

OCC – Operations Control Center

OD - Operations Directive

Office of the Chief of Safety - the Range office headed by the Chief of Safety; this office ensures that the Range Safety Program meets Range and Range User needs and does not impose undue or overly restrictive requirements on a program

OPR - Office of Primary Responsibility

Ops - Operations

OpsSup – Operations Supplement to the RSOR for a particular test. OpsSup is prepared by Range Safety

OR - Operations Requirements

orbital injection (insertion) - the sequence of events in time and space, whereby a vehicle achieves a combination of velocity and position such that without additional thrust at least one orbit of the earth will be made

OSM – Operations Security Manager

OSS – Ocean System Surveillance

OST – Operations Safety Technician

P_i – Impact Probability

PAFB - Patrick Air Force Base

payload - the object(s) within a payload fairing carried or delivered by a launch vehicle to a desired location or orbit; a generic term that applies to all payloads that may be delivered to or from the Western Range; includes but is not limited to satellites, other spacecraft, experimental packages, bomb loads, warheads, reentry vehicles, dummy loads, cargo, and any motors attached to them in the payload fairing

PCC - Photo Control Console

PCM - Pulse Code Modulation

PDR – Preliminary Design Review

PFPA – Preliminary Flight Plan Approval

PI - Program Introduction

PL - public law

PLO – Payload Operator

PMTc – Pacific Missile Test Center

positive control - the continuous capability to ensure acceptable risk to the public is not exceeded throughout each phase of powered flight or until orbital insertion

PPF – Payload Processing Facility

PRD - Program Requirements Document

program - the coordinated group of tasks associated with the concept, design, manufacture, preparation, checkout, and launch of a launch vehicle and/or payload to or from, or otherwise supported by the Western Range and the associated ground support equipment and facilities

PSC – Program Support Concept

PSM – Program Support Manager

PSP - Program Support Plan

public safety - safety involving risks to the general public of the United States or foreign countries and/or their property

RADOT -

Range - in this document, Range refers to the Western Range at VAFB, KMR, & PMTC.

Range Commander - Commander of the Western Range in accordance with DoDD 3200.11; sometimes called Range Director, when interfacing with commercial Range Users.

NOTE: Currently, the 45 SW Commander is also the Range Commander and Range Director

Range Safety Launch Commit Criteria - hazardous or safety critical parameters, including, but not limited to, those associated with the launch vehicle, payload, ground support equipment, Range Safety System, hazardous area clearance requirements, and meteorological conditions that must be within defined limits to ensure that public, launch area, and launch complex safety can be maintained during a launch operation

Range Safety Program - a program implemented to ensure that launch and flight of launch vehicles and payloads present no greater risk to the general public than that imposed by the overflight of conventional aircraft; such a program also includes launch complex and launch area safety and protection of national resources

Range Safety System - the system consisting of the airborne and ground flight termination systems, airborne and ground tracking system, and the airborne and ground telemetry data transmission systems

Range Users - clients of the Western Range, such as the Department of Defense, non-Department of Defense US government agencies, civilian commercial companies, and foreign government agencies that use Western Range facilities and test equipment; conduct prelaunch, launch, and impact operations; or require on-orbit support.

RAPCON – Radar Approach and Control

RASCAD - Range Safety Control and Display

RCC – Range Control Center

RCO – Range Control Officer

RF - Radio Frequency

risk - a measure that takes into consideration both the probability of occurrence and the consequence of a hazard to a population or installation. Risk is measured in the same units as the consequence such as number of injuries, fatalities, or dollar loss. For Range Safety, risk is expressed as casualty expectation or shown in a risk profile; see also collective risk and individual risk.

risk analysis - a study of potential risk

ROC – Range Operations Commander

ROCC - Range Operations Control Center

ROMSSC – Range Operation, Maintenance, and Service Support Contractor

ROOTS – Remotely Operated Optical Tracking System

ROS – Representative Observation System

ROTI – Recording Optical Tracking Instrument/

RROC – ROMSSC Radar and Optics Controller

RSA - Range Standardization and Automation

RSDS - Range Safety Display System

RSLP - Rocket Systems Launch Program

RSOR - Range Safety Operating Requirements

RTDC- Real Time Data Controller

RTS - Range Tracking System

RUSSDPA – Range User Systems Safety Data Package Approval

SAB – Shuttle Assembly Building

Safety Clearance Zones - restricted areas designated for day-to-day prelaunch processing and launch operations to protect the public, launch area, and launch complex personnel; these zones are established for each launch vehicle and payload at specific processing facilities, including launch complexes.

safety holds - the holdfire capability, emergency voice procedures, or light indication system of each launch system used to prevent launches in the event of loss of Range Safety critical systems or violations of mandatory Range Safety launch commit criteria

SAF/SX – The Office of the Assistant Secretary of the Air Force (Space)

SAF/MII – Deputy Assistant Secretary of the Air Force/Installations

SC - Statement of Capability
SCO – Surveillance Control Officer
SDI – Strategic Defense Initiative
SDR – System Design Review
Sec - Security
SELV - Small Expendable Launch Vehicle
SGLS – Space Ground Link System
SHF – Super High Frequency
SIF – Selective Identification Feature
SLBM - Sea Launched Ballistic Missiles
SLC - Space launch Complex
SLF - Shuttle Landing Facility
SLS – Space Launch Squadron
SMAB - Solid Motor Assembly Building
SMARF - Solid Motor Assembly and Readiness Facility
SMC - Space & Missile Systems Center
SMC R&D - Space & Missile Systems Center Research and Development
SMFCO – Senior Mission Flight Control Officer
SMILS - Sonar Buoy Missile Locator Impact System
space safety professional - a safety professional who has been trained and formally certified to meet the criteria outlined in the Launch Complex Safety Training and Certification Program Document
SOI – Space Object Identification
Sp – Space
SP – Southern Pacific railroad
SPARC - Single Point Acquisition and Radar Control
SPF - Spaceport Florida Authority
SPS – Security Police Squadron
Spt - Support
SPTC – Southern Pacific Transportation Company
Sq – Squadron
SRR – System Requirements Review
SSRO – Surface Search Radar Operator
STS - Space Transportation System
STS/MOL - Space Transportation System/Manned Orbital Laboratory
Stan/Eval – Standardization/Evaluation
SVAFB – South Vandenberg Air Force Base
Svcs - Services
TAER – Telemetry Analog Equipment Room
TASSE – TAER Automated Scout Support Equipment
TBD – to be determined

TIM - Technical Interchange Meeting
TMC – ROMSSC Telemetry Controller
TMVS – Telemetry Validation System
TO – Training Officer
TOCC – Test Operations Control Center
TRAЕ – time, range, azimuth, and elevation
Trans - Transportation
transponder - the portion of the airborne Range tracking system that receives and decodes interrogations and generates replies to the interrogations. The transponder permits the ground instrumentation radar to furnish significantly greater precision and accuracy data at much greater distances and prevents mistracking of powered vehicles due to interference of exhaust plumes or spent stages
TSO – Telemetry Systems Officer/Observer
TTV – Transponder Test Van
UCS - Universal Camera Sites
UDS - Universal Documentation System
US - United States
USAF – United States Air Force
USAKA – US Army Kwajalein Atoll
USCG – United States Coast Guard
UHF - Ultra High Frequency
VAFB - Vandenberg Air Force Base
VDL – Voice Direct Lines
VHF - Very High Frequency
VIB - Vertical Integration Building
VP – Vertical Plane
VPS – Vehicle Peculiar Supplement
VRP - Video Remote Patch
VTRS – Vandenberg Telemetry Receiving Site
VWSS – Vertical Wire Skyscreen
waiver - a designation used when, through an error in the manufacturing process or for other reasons, a hardware noncompliance is discovered after hardware production, or an operational noncompliance is discovered after operations have begun at the Western Range
WCSC – Western Commercial Space Center
WCOOA – West Coast Offshore Operating Area
WINDS – Weather Information Network Display System
Wing Commander - see Range Commander
WOC – Weather Operations Center
WOPR – Wing Officer with Primary Responsibility
WR - Western Range
WRCC – Western Range Control Center

WRR – Western Range Regulation
WSWG – Wing Support Working Group